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Current Status and Prospects of JUNO

Saturday 10 September 2022 12:00 (20 minutes)

The Jiangmen Underground Neutrino Observatory (JUNO) is a medium-baseline reactor neutrino experiment currently under construction in southern China. $20\,\mathrm{kton}$ LAB-based liquid scintillator target is contained inside the Central Detector, a $35.4\,\mathrm{m}$ diameter spherical acrylic vessel. The scintillator light emitted from the Central Detector will be read out by the surrounding 17612 20" and 25600 3" photo-multiplier tubes, which are submerged inside a $40\,\mathrm{m}$ diameter cylindrical water pool acting as an active shielding detector. The main goal of JUNO will be the determination of the neutrino mass ordering at a statistical significance of about $3\,\sigma$ within $6\,\mathrm{years}$ of data-taking using electron anti-neutrinos produced in two nuclear power plants at a distance of $\sim\,52.5\,\mathrm{km}$. To achieve this, JUNO aims for an unprecedented $3\,\%$ energy resolution at $1\,\mathrm{MeV}$. This resolution together with the detector's low energy threshold will enable a broad physics program including the observation of solar neutrinos, geo-neutrinos, neutrinos from a close by core-collapse supernova and the diffuse supernovae neutrino background as well as competitive sensitivity to proton decay. Additionally, JUNO will be able to determine the neutrino oscillation parameters $\sin^2\,(_{12})$, Δm_{21}^2 and Δm_{31}^2 at the sub-percent level. The talk will present the design of the experiment, its status and its physics prospects.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

JUNO in Kaiping, Jiangmen, southern China

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

No

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